RELIANCE FOUNDRY CO. LTD.

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Series R-8400 Retractable Bollards

Technical Service Manual

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Chapter 1

Series 8400 Retractable Bollards by Reliance Foundry

Ensure that Reliance Foundry's retractable bollards are right for your application.

Retractable bollards are sleek, access control devices that make a pronounced statement on streetscapes. When erected, they deter access to restricted areas. When retracted, they allow temporary admission. Series 8400 retractable are the perfect solution for communicating the changing access requirements of any site but they are mechanical assemblies that require the same care and attention as any other mechanical device. The following points should be considered prior to any retractable bollard purchase or installation:

1. Retractable bollards are susceptible to environmental demands, and site selection is very important. Retractable bollards are susceptible to oxidation or rusting in high-salt (seaside) environments, as well as areas where street de-icing chemicals and compounds are frequently used. These bollards are available in two different materials to meet environmental demands:

   304 Stainless Steel (recommended for use in dry climates) is the most versatile and widely used grade of stainless steel. It is readily formed into a variety of components for applications in the industrial, architectural, and transportation fields. **Grade 304 stainless steel provides a good level of corrosion and oxidation resistance, but over time it may tarnish.**

   316 Stainless Steel (recommended for use in moist or coastal climates) is another common grade of stainless steel. 316 stainless steel provides a high level of anti-corrosion protection and is more resistant to salt water corrosion than 304 stainless steel. 316 stainless steel is priced higher than 304 steel due to its greater anti-corrosive properties. However, depending on the environmental demands that will be placed on the model of bollard, even **Reliance Foundry's 316 stainless steel bollards may be susceptible to**

failure in extreme environments. In areas affected by extreme environmental conditions, other products or material options should be considered.

** Note: Regardless of material composition, all stainless steel bollards are housed in a powder-coated STEEL receiver that sits below the concrete surface.*

2. All of Reliance Foundry's 8400-Series retractable bollards are produced in stainless steel, and they can be ordered with a standard, powder-coated colors (at an extra cost) to meet site aesthetic demands, and to enhance elemental protection (in the first years of service).

3. Retractable bollards must be installed with significant care and attention to detail – ensuring that adequate foundation support and significant drainage is available.

4. Retractable bollards will malfunction if water builds in the receiver and the barometer dips. Retractable bollards can still be installed in cold climates but if water freezes in the bollard's mechanical components, it may become "stuck" in the raised or lowered positions for prolonged periods of time.

5. The major mechanical features of these bollards are enclosed below ground, making them susceptible to dust and dirt engaging with critical components. These bollards require routine maintenance and cleaning to keep them in optimal working condition, and such maintenance is demanded more often in significantly dusty or dirty areas.

Chapter
2

Service Equipment Required

Bollard Key

Tamper-Resistant Key

5mm Allen Key

3mm Allen Hex Key

Compressed Air Duster

Wrench Set

Synthetic Scouring Pads

Assembly Grease

Small Hammer
Optional

Swaging Tool and Crimping Sleeves

All-Purpose Lubricant

Lock De-Icer

Rag

Small Drift *Optional*

Citrisurf 77 Plus *Optional*

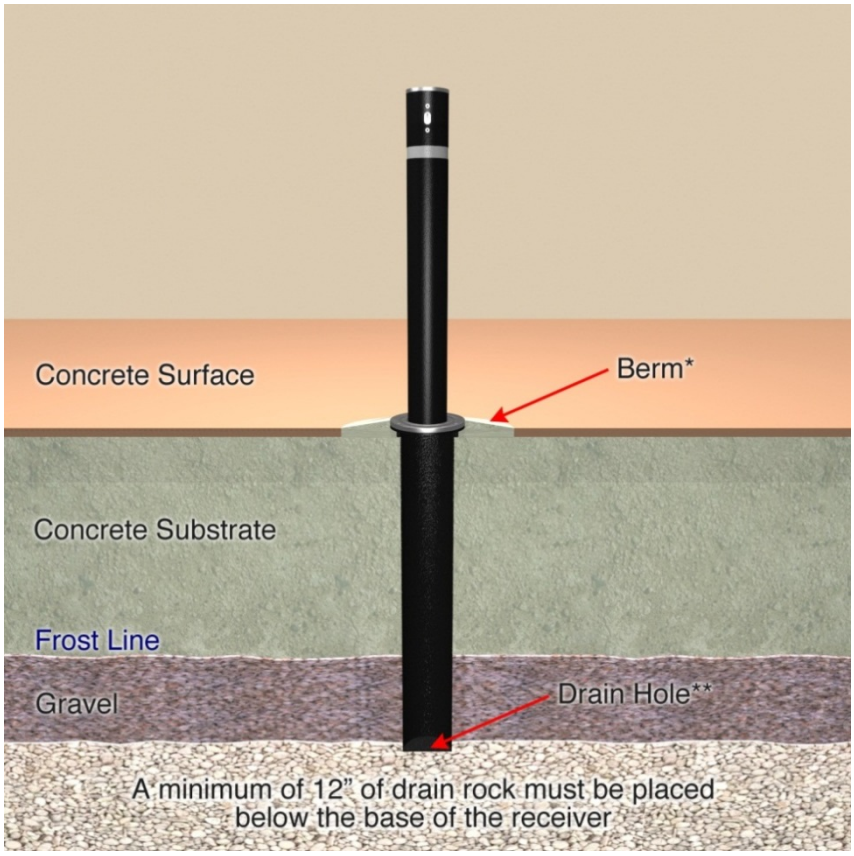
Note

If you require a replacement bollard key or tamper-resistant key, please contact Reliance Foundry's Sales Department.

Chapter
3

Understanding the Retractable Bollard

Two components work in tandem to form a retractable bollard – a receiver and a bollard. The receiver is the external cylinder that is embedded in the concrete substrate. It houses an internal cylinder (post) which is referred to as the bollard. The bollard can be telescoped in and out of the receiver to allow or restrict vehicle access to the surrounding area. At the bollard's base, a plunger is found that can be extended or retracted by inserting a key in the lock. The plunger holds the bollard in place when it is in its extended position. Because the receiver is set in the concrete substrate, it cannot be moved after installation.
In order to function properly, a retractable bollard must be installed with adequate drainage. The buildup of moisture can lead to many service issues, especially in cooler climates. Series 8400 retractable bollards can operate effectively in cold environments but moisture must not be allowed to build up in the receiver. Buyers should review the installation site and ensure that **ensure that an adequate level of drainage can be provided for each retractable bollard**.



** A raised concrete shoulder (berm) will help to prevent moisture from accumulating in the bollard's receiver*
*** Threaded drain holes that allow piping or tubing to be affixed to the receiver are available on upon request*

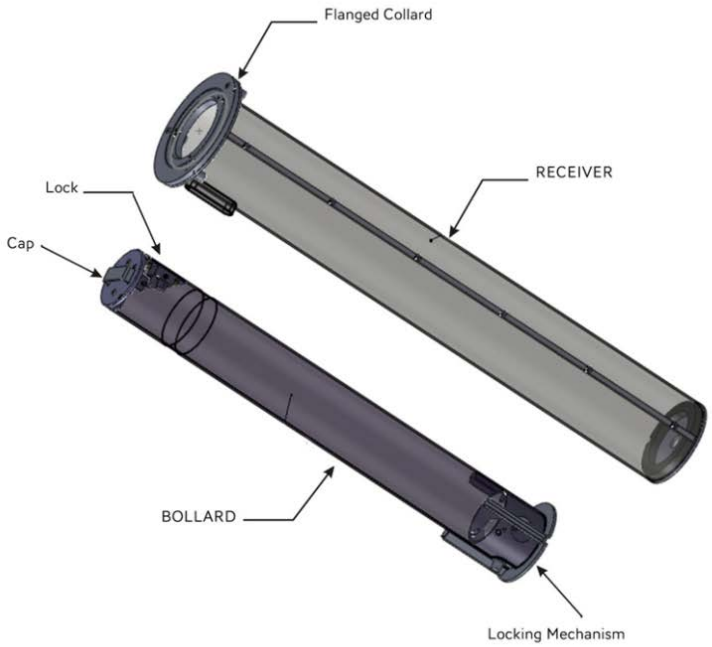
Chapter

4

Disassembling the Retractable Bollard

Removing the Bollard from the Receiver

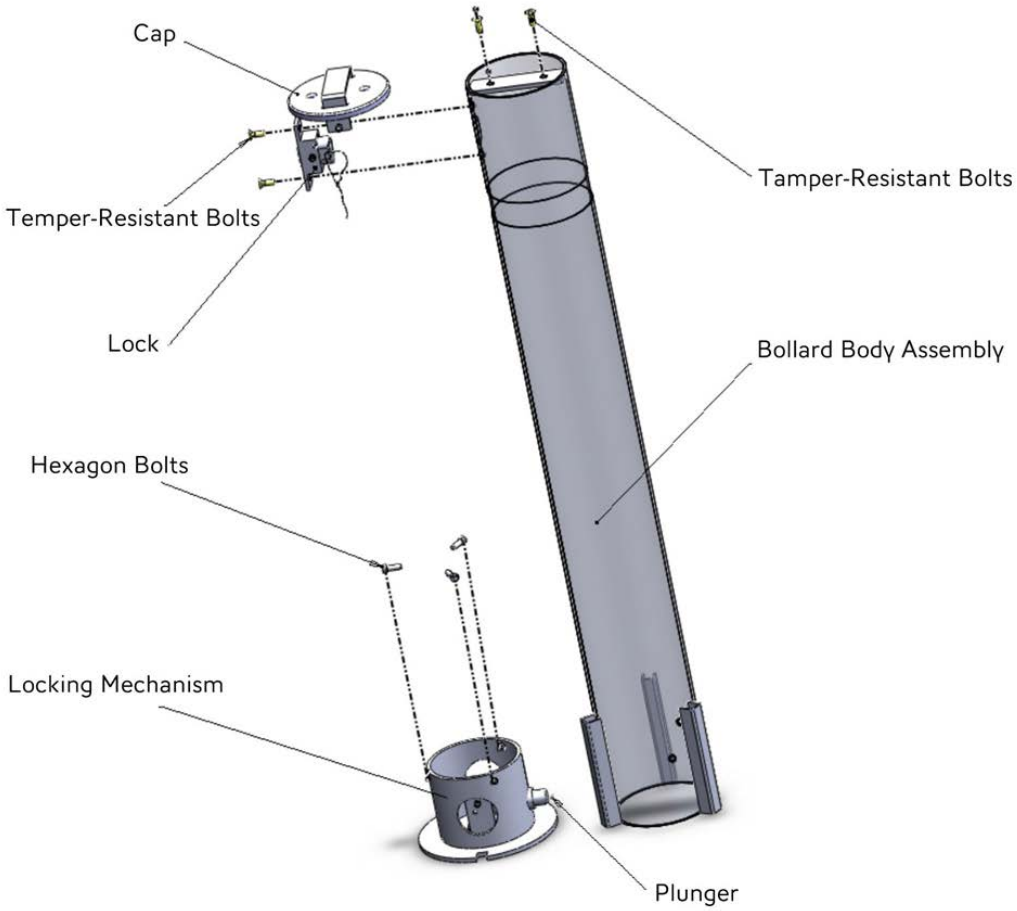
1. Use the tamper-resistant key to untighten the 3 tamper resistant bolts on the flange collar and remove it.
2. Lift the bollard, insert the key and turn it in a clockwise motion.
3. Hold the key in position and continue to lift the bollard. The plunger should remain retracted, allowing the bollard to be removed from the receiver.



Disassembling the Bollard Body Assembly

The bollard body assembly is made up of several parts: a cap that features a lifting handle, a lock and a locking mechanism that holds the plunger. To disassemble the bollard assembly:

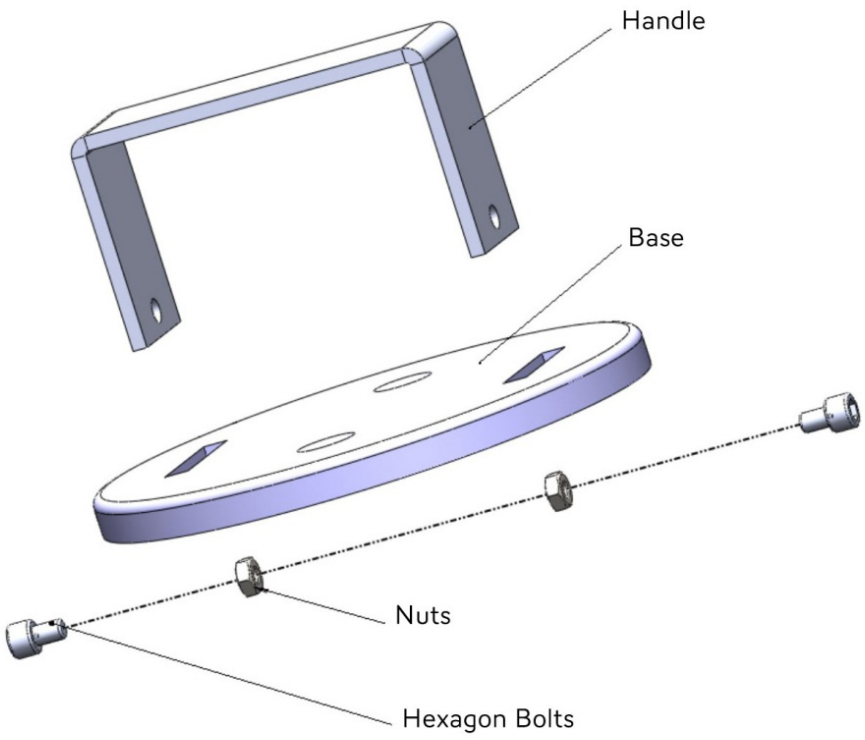
1. Use the tamper-resistant key to loosen the two tamper-resistant bolts found on the cap.
2. Remove the cap and lay the bollard horizontally on a flat surface.
3. Loosen and remove the tamper-resistant bolts on the lock.
4. Use a standard 5mm Allen key to loosen and remove the three stainless steel hexagon bolts that hold the locking mechanism at the body assembly's base.
5. Wire rope connects the lock to the locking mechanism. Remove both assemblies together.



Disassembling the Bollard's Cap

The retractable bollard's cap consists of two parts – a base and a handle. To disassemble the cap:

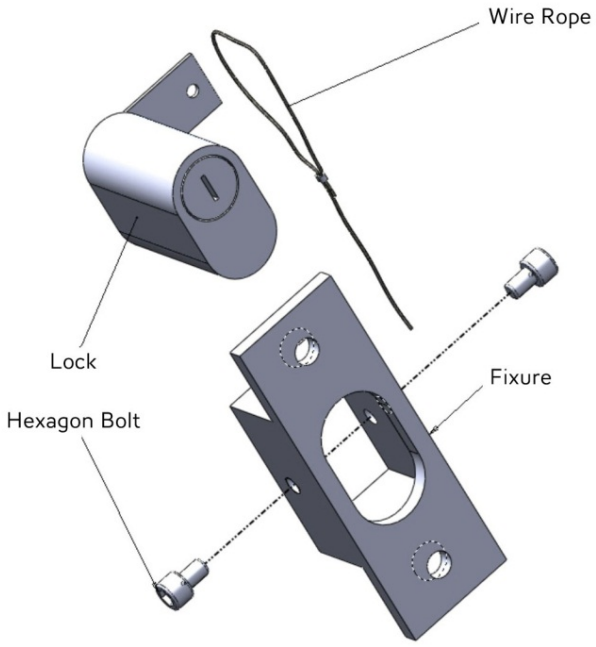
1. Loosen and remove the two hexagon bolts with a 5mm Allen key.
2. Remove the caps' handle from the cap's base.



Disassembling the Lock

The retractable bollard's lock is housed in a fixture and can be easily removed. To remove the lock:

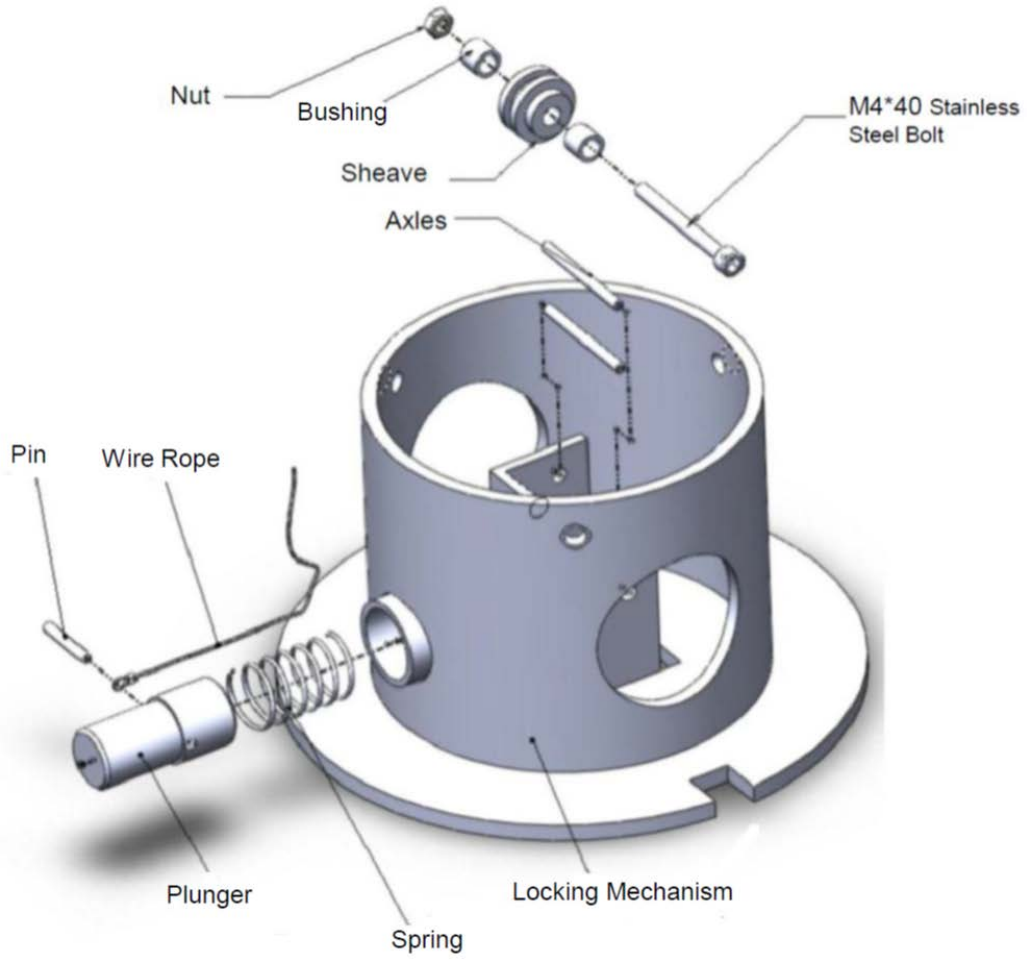
1. Loosen and remove the hexagon bolts found on each side of the lock's fixture with a 3mm Allen key.
2. Remove the lock from the fixture.



Disassembling the Locking Mechanism

The locking mechanism contains several intricate parts: a plunger, a pin, a spring, two axle assemblies and a sheave that is held in place with an M4*40 Stainless Steel Bolt. To disassemble the locking mechanism:

1. Pull the plunger by hand and use a drift to remove the pin.
2. Slide the wire rope out of the mechanism and remove the plunger and spring.
3. Use a 3mm Allen key to loosen the M4*40 stainless steel bolt and remove the sheave and bushings.



Chapter 5

Regular Maintenance

Regular, routine and scheduled maintenance of these bollards is required to keep them in good working order, and to prevent deterioration of the bollard's surface.

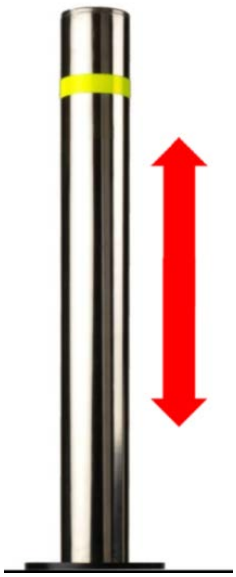
1. Keep the surface surrounding the receiver and bollard free from debris and standing water. Use a broom to remove sand, gravel or debris. Avoid moving the broom over the flange collar and cap of the bollard. Brush in an outward motion, away from the bollard. Sand and debris that fall through small gaps may eventually cause the retractable bollard to seize. If sand or debris does accumulate in the receiver, it can be removed by dislodging the bollard and using a Shop Vac to extract the blockage.

Sweep away from the bollard and push debris outward.

2. Use a rag to wipe the retractable bollard frequently. Remove any debris that may have accumulated on the inner cylinder and flange collar. Look for signs of rust or staining.
3. To ensure that the bollard glides in and out of the receiver smoothly and to protect the bollard from rust, use a rag to apply all-purpose lubricant to the entire surface of the bollard. Ensuring the surface remains lubricated will extend the life of the bollard.

Use a rag to apply all-purpose lubricant to the surface of the bollard regularly.

4. Remove rust as soon as it is noticed with an all-purpose lubricant and a synthetic scouring pad. To avoid scratching the surface of the bollard, scrub in a vertical motion. Once the rust is removed, apply an all-purpose lubricant to the entire surface of the bollard immediately.



To remove rust and avoid scratching the bollard, scrub in a vertical motion.

Note

Many Installers have found Citrisurf 77 Plus to be an effective agent for eliminating hard-to-remove stains that have set on retractable bollards.

5. Remove the locking mechanism regularly and ensure that the sheave, plunger and plunger hole remain lubricated. Use assembly grease and apply a generous amount. Retractable bollards that are installed in areas that experience exceptionally warm or wet conditions may need to be lubricated more frequently.

Ensure that the plunger **and sheave are adequately lubricated with assembly grease.**

6. Wipe the lock and apply an all-purpose lubricant every three months. Apply a generous amount of the lubricant to the lock's keyhole. This will help to protect the lock and allow it to function more smoothly.

Use an all-purpose lubricant to lubricate the keyhole and protect the lock.

Chapter

6

Troubleshooting

"I can't insert the key."

1. Check the lock for debris. If anything is blocking passage of the key, remove it. For more difficult-to-remove fragments, use a compressed air duster (avoid inserting the straw in the keyhole) or flush the debris out with a dry graphite lubricant.

Compressed air dusters are ideal for removing sand, dust and other forms of debris from keyholes..

2. Ensure that the lock is not frozen. If the lock is frozen, apply a generous amount of lock de-icer to the key and gently wiggle it into the lock.

Lock de-icer or other alcohol based products, like hand-sanitizer, can be used to free a retractable bollard's frozen lock.

"I've inserted the key but the lock won't turn."

1. Remove the retractable bollard from the receiver and disassemble it. If the retractable bollard cannot be removed from the receiver, use a 5mm Allen key to loosen both hexagon bolts on the bollards cap. Remove the cap and locate the wire rope. Pull it by hand and remove the retractable bollard from the receiver.

If necessary a retractable bollard can be manually removed by removing the cap and pulling the wire rope.

2. Inspect the wire rope. If the wire rope is no longer attached, reconnect it to the pin on the plunger with a crimping sleeve and a swaging tool. Set the bollard over the locking mechanism and ensure the lock is in the "locked" position. Feed the wire rope through the latch until it is tight and then mark it. Use a crimping sleeve and swaging tool to secure the wire rope. Replacement wire rope and crimping sleeves can be easily sourced at hardware stores or purchased from Reliance Foundry.

Use a swaging tool and crimping sleeve to reattach wire rope.

3. Remove the locking mechanism and examine it. Clean all parts and apply generous amounts of assembly grease to the sheave and the plunger. Pull the cable with your hand. If the plunger does not retract, disassemble the plunger and inspect the spring. Replace the spring if necessary. All parts within the locking mechanism can be ordered from Reliance Foundry. Contact the Sales Department for more information.

Ensure the plunger's spring is in proper working order.

"The bollard will not retract."

1. Remove the bollard, disassemble it and ensure there is no debris in the locking mechanism. Water, debris and ice can all cause the retractable bollard to seize. Use a rag, a compressed air duster, a lock de-icer, or heat to remove the debris that is affecting the bollard. Apply all-purpose lubricant to the lock and ensure that the plunger and sheave are adequately lubricated.

Generously lubricating all parts of the locking mechanism, with assembly grease, will help to prevent the bollard from seizing.

2. Ensure that the retractable bollard is not frozen. Moisture and cold air can cause the bollard's spring-loaded plunger and locking mechanism to freeze and lock in place. Ice can also form on the wire rope, causing the bollard to seize. Lock De-icer and heat can be used to remove ice but it is difficult to eliminate this problem. Because retractable bollards have mounting systems that are installed below a concrete's surface, they are more susceptible to freezing and therefore work better in climates that are not affected by ice snow and freezing temperatures.

Please note that this picture is only a demonstration. Applying lock de-icer to the wire rope will require removing the bollard's cap and reaching down the shaft of the bollard.

More Troubleshooting Tips

1. Inspect all parts of the retractable bollard; clean and lubricate where necessary.

2. Note any areas where it may be possible for water to enter the receiver, take preventative measures to ensure that water is unable to enter the receiver

3. Remove any visible rust or stains or stains immediately.

Conclusion

Reliance Foundry is committed to providing the information and technical resources .necessary to support its industry-leading bollards. If you have questions or would like more information on Reliance Foundry's innovative bollards or their application, please visit www.reliance-foundry.com or call the Sales Department at 1-800-735-5600.